

REMARKS

The present Response is submitted in response to the Official Action of April 16, 2007, and the Applicant respectfully requests an extension of one (1) month in the period for response to the Official Action.

The Examiner objects to the disclosure of the Application, e.g., paragraph [031], for an informality noted therein. In response, paragraph [031] is accordingly amended above to address and correct the noted informality without adding any new matter to the disclosure, the invention or the claims. The Applicant therefore respectfully requests that the Examiner reconsider and withdraw the objection to the disclosure.

Claims 18-21, 23, 24 and 26 are then rejected, under 35 U.S.C. § 112, second paragraph, as being indefinite for the reasons noted in the official action. The rejected claims are accordingly amended, by the above claim amendments, and the presently pending claims are now believed to particularly point out and distinctly claim the subject matter regarded as the invention, thereby overcoming all of the raised § 112, second paragraph, rejections. The entered claim amendments are directed solely at overcoming the raised indefiniteness rejection(s) and are not directed at distinguishing the present invention from the art of record in this case.

Next, claims 18-21, 23 and 24 are rejected, under 35 U.S.C. § 103(a), over Oswald '381 in view of Lutz '542 while claim 26 is rejected, under 35 U.S.C. § 103(a), over Oswald '381 in view of Lutz '542 and Brunner et al. '141. The Applicant acknowledges and respectfully traverses the raised obviousness rejections in view of the above amendments and the following remarks.

Upon reconsidering claims 18 - 21, 23, 24 and 26 and the cited prior art, claim 18 is amended above to more clearly and explicitly recited the fundamental distinctions between the

present invention, as recited in claim 18, and the cited prior art, and the following discussions will therefore be based upon amended claim 18.

The present invention, as recited in amended claim 18, is directed to a drive wheel unit (4, 14, 18) for an electrically driven multi-axle all terrain vehicle having a vehicular underbody (2) and a plurality of drive wheel units (4, 14, 18). According to the presently claimed invention, each drive wheel unit (4, 14, 18) includes a single independently sprung drive wheel (4) connected to a jointed shaft (8) having an end linkage (12) connected to an output of a drive train (14) fixedly mounted within the vehicle underbody (2) and a single drive motor (18) connected to an input of the drive train (14) where the single drive motor (18) is fixedly mounted within the vehicle underbody (2) in a drive motor space that is radially offset from an outer circumference of the drive wheel (4) and that is generally coplanar with the drive wheel (4).

According to the present invention, therefore, the drive motor (18) and drive train (14) are sprung masses of the drive wheel unit (4, 14, 18) and the drive wheel (4) is an unsprung mass of the drive wheel unit (4, 14, 18), thereby significantly reducing the unsprung weight of the drive units of the vehicle, and the drive wheel units (4, 14, 18) do not extend into a central space of the vehicle underbody (2), thereby significantly increasing the usable free space within the vehicle.

Turning now to the cited prior art, Oswald '381 relates to an undercarriage for adverse terrain vehicles where a vehicle has at least two undercarriages, that is, at least one undercarriage on each side. According to Oswald '381, each undercarriage comprises multiple drive wheels 18 mounted on corresponding axles 26 and driven by a single drive motor 30 wherein the drive wheels 18 and their axles 26, the motor 30 and a drive train connecting the motor to the wheels are all rigidly mounted onto a single elongated frame 12 that, in turn, is attached to the chassis of the vehicle. Oswald '381 describes a variety of configurations of the

undercarriages, including embodiments employing gear and drive chains in the drive train and an embodiment wherein the motor is mounted on the frame between two wheels and extending outwards from the frame to overlap the spaces occupied by the wheels.

It is, therefore, apparent that, despite showing a configuration in which the motor is located parallel to and between two wheels, there are a number of fundamental distinctions between the presently claimed invention, as recited in amended claim 18, and the teachings of Oswald '381.

For example, in the present invention the vehicle is provided with a number of separate and independent drive wheel units wherein each drive wheel unit is a complete, self-contained, independently functioning unit comprising a wheel, a motor and a drive train. According to Oswald '381, and in fundamental contrast from the present invention as recited in claim 18, all of the drive wheels 18, their corresponding axles 26, and the motor 30 driving the wheels 18 and the drive train connecting the motor 30 to the wheels 18 are combined into a single undercarriage assembly.

The present invention therefore drives each drive wheel with its own motor and drive train, thereby providing, it is respectfully submitted, significantly greater driving power to each wheel while Oswald '381 attempts to drive all of the wheels of an undercarriage with a single motor and drive train, which either severely limits the power available to each wheel or requires a significantly larger motor since the one motor must drive all of the wheels.

In addition in this regard, and as recited in claim 18, the drive wheels of the drive units of the presently claimed invention are each individually sprung, as well as being individually driven by its own motor and drive train, thereby allowing each drive wheel to adapt independently to the terrain being traversed and thus significantly improving the cross-terrain performance of the vehicle.

According to Oswald '381, however, and in complete contrast from the present invention, the wheels of each undercarriage are rigidly fixed with respect to one another by being jointly and rigidly mounted to the undercarriage frame so that the wheels have no degree of independence from one another and must always act together in a single, fixed geometry. In addition, it must be noted that neither the wheels nor the undercarriage are sprung, either separately or jointly, so that the wheels are again forced to act as a single unit having a fixed, rigid geometry, which conclusion is further supported by noting that Oswald '381 explicitly states that the vehicle must be steered by "skidding" the wheels of the undercarriages.

It must be noted, moreover, that the lack of any teaching or suggestion of any form of springing, for either the drive wheels or the undercarriage itself in Oswald '381, means that according to the Oswald '381, and in complete and fundamental contrast from the present invention, the entire mass of each undercarriage assembly, that is, the wheels, the axles, the motor, the drive train and the frame, comprises an unsprung mass. This arrangement is thus completely contradictory to the present invention as recited in claim 18 wherein the only parts of each drive train that represent unsprung masses are the drive wheels.

It must also be noted in this regard, as discussed in detail below with regard to the combination of Oswald '381 with Lutz '542, that the explicit teaching in Oswald '381 that all of the wheels of an undercarriage are to be driven from a single motor and through a single, directly coupled drive train requires that all of the drive wheels of an undercarriage be in a fixed geometric relationship with respect to each other and with respect to the drive train. The teaching by Lutz '542, however, that the wheels are to be individually sprung and thus independently moveable means that there will be no fixed geometric relationship between the drive wheels or between the drive wheels and the drive train. The combination of the individual wheel springing of Lutz '542 with the single drive motor of Oswald '381 would, therefore, require a drive train that would be fundamentally different from and significantly more complex than that

taught by Oswald '381. At a minimum, the drive train would be functionally and structurally separate from the individual wheels, and would be merely coupled to the individual wheels so that the drive train and motor elements could not be integral with the wheels as taught in the present invention and, in a fundamentally different manner, in Lutz '542. Not only is such a drive train arrangement fundamentally different from that of the present invention, but neither Oswald '381 nor Lutz '542 even suggests such a drive train.

As a result, the structure described by Oswald '381 is entirely and fundamentally different from that of the presently claimed invention as recited in claim 18 and provides apparently inferior performance than does the structure of the present invention. In further distinction between Oswald '381 and the present invention, each undercarriage in Oswald '381 is mounted directly to the vehicle chassis and each of the drive elements of each undercarriage, that is, the drive wheels 18 and their axles 26, the motor 30 and the drive train connecting the motor to the wheels, are mounted directly and rigidly to associated frame 12 so that the entire mass of each undercarriage, that is, wheels 18, axles, 26, motor 30 and the drive train, is unsprung mass.

In fundamental contrast from Oswald '381, and as recited in claim 18, the drive wheel (4) of each drive unit (4, 14, 18) is independently sprung on its corresponding jointed shaft (8) so that the associated motor (18) and the drive train (14) are sprung masses and the only unsprung mass in a drive train unit is the drive wheel (4).

It is, therefore, the Applicant's belief and position that the presently claimed invention, as recited in claim 18, is fundamentally and completely distinguished over and from the teachings of Oswald '381, under the requirements and provisions of 35 U.S.C. § 102 and/or 35 U.S.C. § 103 for at least the reasons discussed above. As such, any and all rejections in view of Oswald '381 should be withdrawn at this time.

Turning now to the teachings of Lutz '542, this reference relates to a vehicle having a plurality of drive train assemblies wherein each drive train assembly is a separate and independent unit comprising a motor, a transmission connected from the motor and a wheel connected to the transmission by a sprung shaft and universal joint wherein the motor, wheel and shaft are arranged in sequence along a common axis in an assembly support frame, thereby allowing the drive train assemblies to be adapted to a variety of vehicle frames. It is, therefore, apparent that the basic structure and operation of the present invention is completely and fundamentally distinguished from and over the teachings of Lutz '542.

More specifically, Lutz '542 clearly and explicitly describes, and clearly shows in the figures, that in each drive train assembly including the motor, the transmission, the wheel and the shaft connecting the wheel to the transmission are arranged in sequence along a common axis. As a consequence, and again as clearly and explicitly described and shown by Lutz '542, each drive train assembly in the Lutz '542 system extends into and occupies the central spaces of the vehicle.

In fundamental contrast from Lutz '542, the drive units of the present invention, as recited in claim 18, do not extend into or occupy the central spaces of the vehicle because "the single drive motor (18) is fixedly mounted within the vehicle underbody (2) in a drive motor space that is radially offset from an outer circumference of the drive wheel (4) and that is generally coplanar with the drive wheel (4)".

In addition, and as a consequence of the side by side arrangement of the motor and drive wheels, the drive train connecting the motor to the drive wheel thereby runs between the axis of the motor and the axis of the wheel and its shaft, so that the drive train is arranged parallel to the axis of the vehicle, instead of across the central axis of the vehicle, and further leaves the central spaces of the vehicle open to other uses.

It is, therefore, the Applicant's belief and position that the present invention, as recited in claim 18, is fundamentally and completely distinguished over and from the teachings of Lutz '542, under the requirements and provisions of 35 U.S.C. § 102 and/or 35 U.S.C. § 103, for at least the reasons discussed above. As such, any and all rejections in view of Lutz '542 should be withdrawn at this time.

Now considering the combination of Oswald '381 in view of Lutz '542, it is apparent that the teachings of Oswald '381 and Lutz '542 are fundamentally different and contrary to one another such that it would not occur to one of ordinary skill in the arts to combine the references as alleged. In addition, it is also apparent that if any attempt were made to combine the references, the resulting combination would not teach, suggest or disclose the present invention, as recited in claim 18, under the requirements and provisions of 35 U.S.C. § 103.

For example, Oswald '381 explicitly teaches that all the wheels of an undercarriage should be driven by a single motor and through a single drive train coupled to all of the wheels. Lutz '542, in complete contrast from Oswald '381, just as explicitly teaches that each wheel should be driven by its own motor and drive train, so that the teachings of Oswald '381 and Lutz '542 are completely and fundamentally contradictory to each other.

In addition, Oswald '381 explicitly teaches that neither the wheels nor the undercarriage as a whole are to be sprung and that the wheels and the undercarriage frame are to be constructed as a single rigid unit, while Lutz '542 just as explicitly teaches that the wheels are to be individually sprung and thus individually moveable. Again, therefore, the teachings of Oswald '381 and Lutz '542 are completely and fundamentally contradictory to each other.

Further in this regard, the explicit teaching in Oswald '381 that all of the wheels of an undercarriage are to be driven from a single motor and through a single, directly coupled drive train requires direct, parallel connections through the drive train and to the wheels which, in turn, requires that the wheels of an undercarriage be in a fixed geometric relationship with

one another. The explicitly teaching in Lutz '542, however, that the wheels are to be separately sprung and thus independently moveable with respect to one another means that there can not be any fixed geometric relationship between the drive wheels and between the drive wheels and the drive train. The combination of the individual wheel springing of Lutz '542 with the single drive motor of Oswald '381 would, therefore, require a drive train that would be fundamentally different from and significantly more complex than that taught by Oswald '381. At a minimum, the drive train would have to be functionally and structurally separate from the individual wheels and would be merely coupled to the individual wheels, so that the drive train and motor elements could not be integral with the wheels as taught in the present invention and, in a fundamentally different manner, in Lutz '542. Not only is such a drive train arrangement fundamentally different from that of the present invention, but neither Oswald '381 nor Lutz '542 even suggests such a drive train. Again, therefore, the teachings of Oswald '381 and Lutz '542 are completely and fundamentally contradictory to each other.

It is, therefore, apparent that even if the teachings of Oswald '381 were to be combined with the teachings of Lutz '542, solely for purposes of discussion and without any admission, agreement or concurrence by the Applicant, the resulting combination would still not even suggest the presently claimed invention because the teachings of each reference contradict the teachings of the other and the teachings of the present invention in such a way as to prohibit such a combination. For example, the requirement in Oswald '381 for a single motor and drive train contradicts both the present invention and the requirement in Lutz '542 for individual springing of the wheels, and the reverse, while the requirement in Oswald '381 that the wheels and the undercarriages be unsprung contradicts both the present invention and Lutz '542 while the requirement in Lutz '542 that there be a motor and a drive train in axial sequence with each wheel contradicts both the motor/drive train/wheel configuration of the present invention and the use of a single motor and drive train for all the wheel in Oswald '381.

It is, therefore, belief and position of the Applicant that the teachings of Oswald '381 and Lutz '542 cannot be properly combined by those of ordinary skill in the arts to result in the presently claimed invention, under the requirements and provisions of 35 U.S.C. § 103, and that even if such a combination were attempted, the resulting combination would not and could not in any way teach, suggest or disclose the presently claimed invention to those of ordinary skill in the arts under the requirements and provisions of 35 U.S.C. § 103.

It is, therefore, the belief and position of the Applicant that it would not be obvious in any way for one of ordinary skill in the arts to combine the teachings of Oswald '381 and the teachings of Lutz '542 as alleged, and that the combination of the teachings of Oswald '381 with the teachings of Lutz '542 would not teach, show or suggest the present invention as recited in claim 18 to those of ordinary skill in the arts under the requirements and provisions of 35 U.S.C. § 103.

Now considering the teachings of Brunner et al. '141 and the combination of Oswald '381 in view of Lutz '542 and Brunner et al. '141, Brunner et al. '141 relates to a motor vehicle drive module consisting of a motor, a transmission and a wheel assembled in axial sequence to comprise a module, of which a plurality can be mounted to a vehicle to propel the vehicle.

It is, therefore, apparent that the Brunner et al. '141 drive module is essentially very similar to the Lutz '542 drive assembly. The present invention is thereby fully distinguished from Brunner et al. '141, under the requirement and provisions of 35 U.S.C. § 102 and/or 35 U.S.C. § 103, for the same reasons that the present invention as recited in claim 18 is distinguished over and from Lutz '542. It is also apparent that the present invention, as recited in claim 18, is fully and patentably distinguished over and from the combination of Oswald '381, Lutz '542 and Brunner et al. '141, under the requirements and provisions of 35 U.S.C. § 103, for the same

reasons, as discussed above, and all of the raised rejections in view of the applied art should be withdrawn at this time.

Lastly, it will be noted that claims 19-21, 23, 24 and 26 are all directly or indirectly dependent from claim 18 and thereby incorporate all recitations and limitations of claim 18, so that claims 19-21, 23, 24 and 26 are all fully and patentably distinguished over and from Oswald '381, Lutz '542 and/or Brunner et al. '141 and the teachings resulting from the combinations of Oswald '381 in view of Lutz '542 and Oswald '381 in view of Lutz '542 and Brunner et al. '141, under the requirements and provisions of 35 U.S.C. § 102 and/or 35 U.S.C. § 103, as discussed above. The Applicant, therefore, respectfully requests that the Examiner reconsider and withdraw all rejections of the claims and allow claims 19-21, 23, 24 and 26 as amended herein above.

If any further amendment to this application is believed necessary to advance prosecution and place this case in allowable form, the Examiner is courteously solicited to contact the undersigned representative of the Applicant to discuss the same.

In view of the above amendments and remarks, it is respectfully submitted that all of the raised rejection(s) should be withdrawn at this time. If the Examiner disagrees with the Applicant's view concerning the withdrawal of the outstanding rejection(s) or applicability of the Oswald '381, Lutz '542 and/or Brunner et al. '141 references, the Applicant respectfully requests the Examiner to indicate the specific passage or passages, or the drawing or drawings, which contain the necessary teaching, suggestion and/or disclosure required by case law. As such teaching, suggestion and/or disclosure is not present in the applied references, the raised rejection should be withdrawn at this time. Alternatively, if the Examiner is relying on his expertise in this field, the Applicant respectfully requests the Examiner to enter an affidavit substantiating the Examiner's position so that suitable contradictory evidence can be entered in this case by the Applicant.

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In view of the foregoing, it is respectfully submitted that the raised rejection(s) should be withdrawn and this application is now placed in a condition for allowance. Action to that end, in the form of an early Notice of Allowance, is courteously solicited by the Applicant at this time.

The Applicant respectfully requests that any outstanding objection(s) or requirement(s), as to the form of this application, be held in abeyance until allowable subject matter is indicated for this case.

In the event that there are any fee deficiencies or additional fees are payable, please charge the same or credit any overpayment to our Deposit Account (Account No. 04-0213).

Respectfully submitted,



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